

Applicant: Arnold Schneider
Serial No.: 10/826,857
Date: September 26, 2005

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Listing of the Claims:

1. (Currently Amended) An apparatus for the continuous bonding and/or welding of material webs by means of ultrasound comprising:

an ultrasonic horn configured as ~~a rotating roller~~ at least two rotating rollers, arranged in tandem;

an anvil disposed opposite the ~~rotating roller~~ rotating rollers, each rotating roller in contact with the anvil;

an amplitude transformer set axially on each end of the rotating ~~roller~~ rollers;

at least one ultrasonic converter attached to each amplitude transformer with an energy supply; and

the length of the rotating ~~roller~~ rollers equaling a multiple of a lambda-half wave of an imposed oscillation on the rotating ~~roller~~ rollers.

2. (Currently Amended) The apparatus in accordance with claim 1, wherein radial bearings are disposed between the amplitude transformer and ~~the~~ each rotating roller.

3. (Cancelled)

4. (Previously Presented) The apparatus in accordance with claim 1, wherein the anvil is a rotating counter-roller.

5. (Previously Presented) The apparatus in accordance with claim 1, wherein the outer surface of one of the rotating roller and the counter-roller is one of smooth and patterned.

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6. (Previously Presented) The apparatus in accordance with claim 1, wherein the anvil is fixed.

7. (Currently Amended) The apparatus in accordance with claim 6, wherein the anvil extends in a tangential direction respective to the at least two rotating ~~roller~~ rollers.

8. (Currently Amended) The apparatus in accordance with claim 1, wherein the depth of the working gap between the at least two rotating ~~roller~~ rollers and the anvil is adjustable.

9. (Currently Amended) The apparatus in accordance with claim 1, wherein the pressure exerted by the at least two rotating ~~roller~~ rollers on the material web is adjustable.

10. (Currently Amended) The apparatus in accordance with claim 1, wherein each of the at least two rotating ~~roller~~ rollers is formed by a hollow shaft with trunnions.

11. (Currently Amended) The apparatus in accordance with claim 1, wherein the at least two rotating ~~roller~~ rollers can be one of cooled and heated.

12. (Previously Presented) The apparatus in accordance with claim 4, wherein the counter-roller is configured as an active roller with an amplitude transformer and an ultrasonic converter attached thereto.

13. (Cancelled)

14. (Currently Amended) The apparatus in accordance with claim 13, wherein the at least two rollers arranged in tandem are offset to each other in the axial direction by an amount.

15. (Currently Amended) ~~The apparatus in accordance with claim 14, wherein the amount equals a lambda-half~~ An apparatus for the continuous bonding and/or welding of material webs by means of ultrasound comprising:
an ultrasonic horn configured as at least two rotating rollers, arranged in tandem and offset to each other in the axial direction by an amount equal to a lambda-quarter wave of the an imposed oscillation;
an anvil disposed opposite the at least two rotating rollers, the at least two rotating rollers contacting the anvil;
an amplitude transformer set axially on each end of the at least two rotating rollers;
at least one ultrasonic converter attached to each amplitude transformer with an energy supply; and
the length of each of the at least two rotating rollers equaling a multiple of a lambda-half wave of the imposed oscillation on the rotating rollers.

16. (Currently Amended) The apparatus in accordance with claim 1, wherein the diameter of ~~the~~ at least one rotating roller is partially waisted.

17. (Previously Presented) The apparatus in accordance with claim 16, wherein the depth of the waist equals one part of a lambda-half wave of the imposed oscillation.

18. (Currently Amended) The apparatus in accordance with claim 1, wherein a diameter of ~~the~~ at least one rotating roller is made thicker such that pressure is equally distributed along its length.

19. (Currently Amended) The apparatus in accordance with claim 1, wherein ~~the~~ at least one rotating roller has a swelling.

20. (Currently Amended) The apparatus in accordance with claim 1, wherein a change in diameter of ~~the~~ at least one rotating roller corresponds to a bending line.

21. (Currently Amended) The apparatus in accordance with claim 4, wherein axes of ~~the~~ at least one rotating roller and the counter-roller anvil are skewed relative to each other.

22. (Previously Presented) The apparatus in accordance with claim 1, wherein the anvil is one of a knife and a blade.

23. (New) An apparatus for the continuous bonding and/or welding of material webs by means of ultrasound comprising:
an ultrasonic horn configured as at least two rotating rollers, arranged in tandem and offset each other in the axial direction by an amount;
a fixed anvil configured as a rotating counter-roller disposed opposite the rotating rollers, each rotating roller in contact with the anvil, the anvil extending in a tangential direction respective to each rotating roller;
an adjustable working gap between each rotating roller and the anvil;
an amplitude transformer set axially on each end of each rotating roller;
at least one ultrasonic converter attached to each amplitude transformer with an energy supply; and
radial bearings disposed between the amplitude transformer and the rotating roller.

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24. (New) The apparatus in accordance with claim 23, wherein:
the offset amount is equal to a lambda-quarter wave of an imposed
oscillation; and

the length of the rotating roller equaling a multiple of a lambda-half
wave of the imposed oscillation on the rotating roller;